

Large Aperture Diagnostic System for Gain and Wavefront Measurements on NIF/LMJ Prototype Amplifiers*

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A Large Aperture Diagnostic (LAD) apparatus is being built in order to provide measurements of gain and wave front distortions over the full extracting aperture of the National Ignition Facility (NIF) and Laser Megajoule (LMJ) amplifiers that will be tested in the Amplifier Laboratory/Laboratoire Amplificateur (AMPLAB/LABAMP) at Lawrence Livermore National Laboratory. The LAD system will be able to address each of eight apertures by using a group of full-aperture mirrors on motorized stages. The system will be able to take data on the aperture of interest by translating several mirrors and following a semi-automated alignment procedure. Although the LAD system is complex and expensive, it is necessary to obtain the high-quality data needed to verify the performance of the prototype NIF and LMJ amplifiers. The major components of the LAD system are: the probe laser, the optical relay system, the alignment system, the gain measurement hardware, the beam transport system, and the prototype NIF and LMJ amplifiers. If the required resources are applied, it will be possible to have the LAD system operating by the end of 1996.

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